Prevalence of IBS among Medical Students in Hail University: A Cross - Sectional Study

Abdurehman Ali[1], Mohamed Al Harbi[2], Saleh Al Harbi[3]

Abstract: _Objectives_: *Irritable Bowel Syndrome (IBS) is a common functional gastrointestinal disorder & is the most commonly diagnosed one by gastroenterologists. In this study, we aim to explore the frequency of IBS among medical students in Hail, and the factors associated with this disorder among them.* _Methods_: *A cross sectional study was carried out among medical students of all academic levels in Hail region; Hail University. Data for the study were collected throughout March and May 2016-2017 in Hail. using a validated, s anonymous online questionnaire. The questionnaire included two main sections: Demographics, Rome III Criteria. Results: IBS Mixed was by 20 student, with IBS-constipation by 26 student, IBS dirrhea. Age most commonly associated between 21-23. IBS highest among those who living with family by 26 student. Gender, marital status and parents living situation were not considerable..As academic level increased in 6th and they are likely to have IBS than 1st years. particent who do regular exercise protective against IBS eating habits, hours of sleep, smoking status and participating in regular exercise impact on risk of IBS* _Conclusion_: *The prevalence of IBS is 15% among medical students in hail region age, living situation, advanced academic years, family or personal history, or an episode of travellers' diarrhoea were the main predictors of IBS. .We recommend offering psychological and emotional support as well as stress management courses in order to deal with stress faced by medical students during their academic education*

1. Introduction

Irritable Bowel Syndrome (IBS) is a chronic and debilitating functional gastrointestinal disorder characterized by frequent alteration in bowel habits along with abdominal pain and/or bloating, without any organic lesion in the intestine. It's the most frequently diagnosed disorder by gastroenterologists, and, in the US alone, There are between 2.4 and 3.5 million annual physician visits for IBS in the United States (3,4). .It is varies among socio-economic classes. The prevalence of IBS ranges from 9% to 23% worldwide. by contrast, it change from one country to another country .studies place the IBS prevalence rate as between 10-15% in North America and population in western countries ranges from 2 to 24 %. Besides, In Makkah prevalence rate 26.7% of the subjects using Rome III criteria. the prevalence 9.2% by using Rome II criteria In Aljouf.

There are other factors that contribute to IBS prevalence such as age and gender. IBS affects females more than males, and There is 25% less IBS diagnosed in those over 50 years and there is no association with socioeconomic status. (10, 11, 16). IBS affect patients' quality of life, and is considered second common causes of absenteeism12,13, 14). There is huge number of university students experience from stress and anxiety. study in China found that medical students had a higher risk of functional bowel disorders than science and engineering students (1). Stress in medical students is stress caused by strenuous medical programs, which may have physical and psychological effects on the well-being of medical students. In Saudi Arabia, studies conducted on medical students and interns in Jeddah reported a prevalence of IBS of 31.8%. about irritable bowel syndrome symptoms and diagnosis there is different diagnostic. regardless, Rome III criteria as a useful tool in the diagnosis of irritable bowel syndrome (IBS) (18). This questionnaire was created in 2006. The criteria identify IBS types by using stool consistency and frequency that help diagnosis of IBS (1). prevalence of IBS usually varies significantly between countries .Although IBS is a widespread functional disorder in Western countries, little is

known about its prevalence in Arab countries. moreover, prevalence of IBS among medical students lacks sufficient information.

Aim of the study

To identify prevalence of IBS and associated factors related to its development among the medical students studying in Hail University.

Study objectives
1) To identify the relationship between IBS and other factor during medical student.
2) To estimate the prevalence of IBS among medical student in Hail University
3) To determine the impact of IBS on medical student

2. Methods

a) Study Setting and Design:cross-sectional observational study carry out in March and May 2016-2017 in Hail.
b) Ethical Consideration: The study was approved by the Research and Ethical Committee of Hail . c) Inclusion and Exclusion Criteria: The study included medical students of Hail University .Participants who enrolled on undergraduate courses.
c) Sample Size: Because this study is a cross-sectional we include all academic levels from both genders; males and females.
d) Data Collection Method and Instruments: Data collectors we choose one from all academic levels, and we explain of the study, its goals and significance. Participants were told that they free to nparticipate in a study. They were then informed that they have right to withdraw from the study at any time .They were informed that information kept confidential and they also have the right to not answering any question. Participants weren't given any awards . We ask them if a any question they don't understand in the survey. data were collected by means of a questionnaire throughout the second semester via validated, self-administered and anonymous online questionnaire .The tool was distribute to

10 participants .Every participant was asked to appraise questions : A) whether the questionnaire questions drive participants to complete the survey or not ? B) How long does time it takes to answer an online survey question. C) Are the questions comprehensive, easy to understand and read. Also, if they were understand questions equally by all participants or not? D) Is there any missed points or not ? E) F) if the questions meet the study objectives or not ?.we have some modifications in study including editing the demographics section design The questionnaires are divided into 3 sections; Sociodemographic data, IBS diagnostic criteria and a questionnaire to asses stress .we obtain history of Irritable Bowel as baseline overall IBS symptoms. information ,age, gender, marital status (Single, Married), living status (Living alone, with family or with friends), academic year (1st, 2nd, 3rd, 4th, 5th,6th),Parental Status (living together, divorced, dead "one or both"), average family income (None,990 SR only,990 SR + Financial support from family, 990 SR + salary from working,), common food source (Home, Restaurant), frequency of fast food consumption (daily, 4-6 times, 1-3 times, never), daily sleeping hours (<8 hours, 8 hours or more), history of food allergies (yes, no), cigarette smoking status (currently a smoker, previous smoker, never smoked), family history of IBS (yes, no), and personal history of IBS (yes, no).For the IBS diagnostic criteria questionnaire, patients must have recurrent abdominal pain or discomfort for at least 3 months in the previous 6 months, with 2 or more of the following symptoms: (1) relief with defecation, (2) onset associated with a change in frequency of stool, and (3) onset associated with a change in form (appearance) of stool. The classification of IBS subtypes was based on the predominant stool pattern. IBS with constipation (IBS-C) was defined as having hard or lumpy stool at least 25% of the time and loose (mushy) or watery stools less than 25% of bowel movements. IBS with diarrhea (IBS-D) diagnosis was defined as having loose (mushy) or watery stools at least 25% of the time and hard stools less than 25% of bowel movements. And mixed IBS (IBS-M) was defined as having hard or lumpy stool at least 25% of bowel movements and loose (mushy) or watery stool at least 25% of bowel movements. Unsubtyped IBS means insufficient abnormality of stool consistency to meet criteria other three subtypes.

Statistical Analysis
The prevalence of IBS among all students were analyzed using the Chi-square test using Odds ratio (OR) with 95% confidence intervals (95% CI).different item of IBS were identified using a chi-squared, fishers exact and mann-whitney tests with odds ratio estimated as above using logistic regression .Analysis was conducted using SPSS software version 22

3. Results

IBS Mixed was by 20 student , with IBS-constipation by 26 student, IBS diarrhea .Age most commonly associated between 21-23 .IBS highest among those who living with family by 26 student .Gender, marital status and parents living situation were not considerable..As academic level increased in 6th and they likely to have IBS than 1st years .particent who do regular exercise protective against IBS eating habits, hours of sleep, smoking status and participating in regular exercise impact on risk of IBS (Table 3).food allergies was not associated with odds of IBS. However there was no association with stress level, academic level and family history of IBS were all important risk factor for IBS. Next the feature sof participants with IBS were summarized by type of IBS .Due to low numbers, analysis compared IBS-M to all others. throughout, mixed type category most common type of IBS
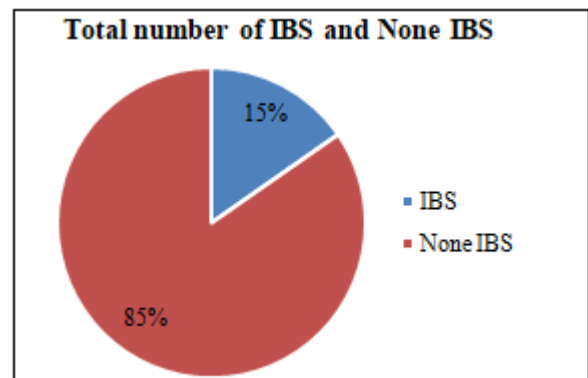
Irritable bowel syndrome variable		IBS		NO IBS		X^2	p	OR	95% CI
		No.	%	No.	%				
Age	18-20	3	17.6	14	82.4	0.592	0.744	0.918	0.206-4.091
	21-23	22	14.2	133	85.8			0.709	0.277-1.812
	> 23[(RC)]	7	18.9	30	81.1			1	
Gender	Male	26	17.8	120	82.2	2.329	0.127	2.058	0.802-5.280
	Female	6	9.5	57	90.5				
Marital Status	Single	28	14.4	166	85.6	1.670	0.205	0.464	0.138-1.559
	Married	4	26.7	11	73.3				
Academic Level	2nd year	1	5.9	16	94.1	6.564	0.161	0.199	0.024-1.675
	3rd year	4	12.5	28	87.5			0.455	0.131-1.583
	4th year	11	19.3	46	80.7			0.761	0.296-1.956
	5th year	5	8.8	52	91.2			0.306	0.098-0.957
	6[th]year[(RC)]	11	23.9	35	76.1			1	
Living Status	With Family	23	15.4	126	84.6	0.130	0.937	1.460	0.174-12.237
	With Friends	8	15.7	43	84.3			1.488	0.163-13589
	Alone[(RC)]	1	11.1	8	88.9			1	
Income	None	0	0	4	100	0.920	0.821	1.265	1.265-1.265
	990 SR only	17	16.7	85	83.3			1.100	0.223-5.416
	990 SR + Financial support	13	14.4	77	85.6			0.929	0.184-4.679

	from family								
	990 SR + salary from working(RC)	2	15.4	11	84.6			1	
Parental Status	Living together	25	15.3	138	84.7	1.813	0.404	2.899	0.368-22.849
	Divorced	6	20.7	23	79.3			4.174	0.457-38.089
	Died (one or both) (RC)	1	5.9	16	94.1			1	
Family history of IBS	Yes	22	24.2	69	75.8	9.818	0.007*	4.919	0.761-31.807
	No	8	8.9	82	91.1			1.081	0.146-7.980
	I don't know(RC)	2	7.1	26	92.6			1	
Having a chronic health problems	Yes	15	22.4	52	77.6	3.809	0.051*	2.121	0.986-4.562
	No	17	12.0	125	88				
Smoking Status	Yes	13	35.1	24	64.9	13.626	0.000*	4.362	9.967-1.909
	No	19	11.0	153	89.0				
Eating source	Homemade food	9	14.5	53	85.5	15.051	0.001*	1.481	0.469-4.680
	Fast food	14	34.1	27	65.9			8.108	2.169-30.311
	Both (RC)	9	8.5	97	91.5			1	
Food hypersensitivity?	Yes	15	33.3	30	66.7	14.539	0.001*	6.636	0.575-70.414
	No	16	10.7	133	89.3			2.324	0.225-24.054
	I don't know	1	6.7	14	93.3			1	
Regular medications	Yes	16	25.8	46	74.2	7.488	0.006*		
	No	16	10.9	131	89.1				
Being in Stress	Always	6	30.0	14	70.0	6.203	0.184	0.683	0.024-19.281
	Often	12	17.9	55	82.1			0.860	0.055-13.473
	Sometimes	12	13.3	78	86.7			0.644	0.040-10.280
	Rarely	1	4.3	22	95.7			0.283	0.009-8.660
	Never (RC)	1	11.1	8	88.9			1	
Sleeping hours	Less than 6 hours	5	13.5	32	86.5	6.304	0.098	0.701	0.053-9.351
	6-8 hours	19	22.4	66	77.6			3.102	0.336-28.674
	8-10 hours	6	8.1	68	91.9			0.463	0.045-4.763
	More than 10 hours (RC)	2	15.4	11	84.6			1	
Exercise frequency	Always	3	17.6	14	82.4	4.631	0.327	0.573	0.075-4.390
	Often	2	8.0	23	92.0			0.328	0.036-3.016
	Sometimes	9	11.1	72	88.9			0.489	0.086-2.780
	Rarely	13	19.7	53	80.3			1.366	0.268-6.962
	Never (RC)	5	25.0	15	75.0			1	

4. Discussion

Irritable bowel syndrome (IBS) is a common medical disorder that is characterized by chronic abdominal discomfort or pain, bloating and changes in bowel habits. 34,35.. disease has an estimated global prevalence of 11.2%The lowest prevalence of IBS occurred in Southeast Asia (7.0%) and the highest in South America (21.0%.(. In Saudi Arabia, studies conducted on medical students and interns in Jeddah reported a prevalence of IBS of 31.8%The prevalence of IBS among undergraduates in Southeast China was reported as 10.4% using Rome III criteria (Dai et al., 2008), and similarly, Dong et al. (2010) reported the prevalence of IBS in college and university students in North China as 7.85%.Recent study among university students in Lebanon reports a prevalence of 20% using the Rome III criteria [17].. On the other hand, a Korean study involving 319 sixth-year medical students found that the prevalence of IBS among males and females was 41% and 25%, respectively [12]. Furthermore, a study in Pakistan stated that males are more likely to report IBS symptoms compared to female students. Many studies reported that females had a higher risk of IBS than male. Ibrahim et al.2013 15 reported that students living in dormitories had a higher prevalence than students living with their families. . a study conducted by Costanian et al. 29 revealed that Those living at the school dormitory or in a private residence (39.5%) were more likely to have IBS than those living with their families hat students living in private dormitories were three times more likely to suffer from IBS.. Living situation was also significant, with the odds of IBS highest among those who live alone (p=0.005)..The current work illustrates that as the academic level increases, the rate of having IBS increases proportionately. Ibrahim et al.2013 15 described similar findings.. reported that IBS was significantly associated with inadequate practicing of physical activities by Indian medical students.. Costanian et al.2015 6 found that students who reported regular practicing of physical exercises had a significa lower prevalence of IBS than others. .The protective effect of physical activity was also reported by other studies 2,9.. On the other hand, our study showed no protective effect of physical activity on the prevalence rate of IBS. Similarly, BMI was reported to be statistically significant by Ibrahim et al. 15 in contrast to the finding reported by our study..Basandra et al. 25 found that consumption of fatty foods was significantly correlated with a higher prevalence of IBS. .However, the current study illustrated that prevalence rate of IBS among medical students in Qassim was not impacted by eating habits.

.In the present study, having food allergies was not associated with odds of IBS. . Malaysian study, which also found that there is no association between alcohol intake and prevalence of IBS among medical students. Nonetheless, the study from India reported a slight association between cigarettes smoking and high IBS .However, another study which support our study did not show such an association 15.. In regards to family and personal history of IBS, we

have found that a family or personal history were all associated with an increase in the odds of IBS. Previously it was reported that there is a familial role of IBS among the general population [30,31. . family-based case-control study in the USA confirmed the familial clustering of IBS cases and reported that IBS family history is a recognized predictor of it. . Familial aggregation of irritable bowel syndrome occurs, and while the environment is key, twin studies generally support a genetic component in irritable.. however, a Swedish nationwide survey including more than 50,000 cases showed increased IBS risk among first-, second- and third-degree relatives. Both environmental and genetic factors may contribute to irritable bowel syndrome (IBS). Nutrition 32. .Concerning chronic health blems, the present study revealed that having chronic health problems was a significant predictor of IBS. e difference is not statistically significant. Non-Saudi nurses had a lower prevalence (12.9%) of IBS compared with Saudis (25.9%), but again the difference was not statistically significant (p>0.05). Similarly, no statistical associations were found between other personal and sociodemographic .This study showed a significant impact of depression As for depression, students diagnosed as having morbid depression had a higher prevalence (41.9%) of IBS compared to those with borderline depression.. Recent studies have shown that subjects with IBS have higher levels of depression, anxiety and neuroticism as compared to those without IBS.[13,14] Various studies have shown that as many as 30-40% of patient with IBS have co-morbid depression or anxiety disorder..However, there was no statistically significant difference.. it has been shown that although IBS symptoms influence negative moods such as anxiety and depression, psychological factors themselves influence motor abdominal functions, sensory threshold and stress reactivity of the intestine[20]. 39..This study covers only medical students in the region of Hail , Saudi Arabia; more studies are needed to cover more medical students all over the kingdom, since many factors might differ from a region to another. .To the best of our knowledge, this is the first study to assess and cast a light on the status of IBS among medical students in Qassim, Saudi Arabia. .This signifies the uniqueness of this paper. .Furthermore, this work has covered both; private and public colleges of medicine in the region, revealing the wide range of social as well as economic factors among medical students in the region. .Red-flags questionnaire has been added as a tool of evaluation, adding to the diagnostic accuracy.

5. Conclusion

The prevalence of IBS is 15% among medical students in hail region.. age, living situation, advanced academic years, family or personal history, or an episode of travellers' diarrhoea were the main predictors of IBS. .We recommend offering psychological and emotional support as well as stress management courses in order to deal with stress faced by medical students during their academic education.

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